Surface Mount PAR® Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions

SMC (DO-214AB)

Cathode ○—|◀—○ Anode

LINKS TO ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS	
V_{WM}	10 V to 43 V
V_{BR}	11.1 V to 52.8
P_{PPM} (10 x 1000 µs)	5000 W
P_D	6.5 W
T_J max.	185 °C
Polarity	Unidirectional
Package	SMC (DO-214AB)

FEATURES

AUTOMOTIVE GRADE

RoHS COMPLIANT

HALOGEN FREE

- Junction passivation optimized design passivated anisotropic rectifier technology
- T_J = 185 °C capability suitable for high reliability and automotive requirement
- Available in unidirectional polarity only
- 5000 W peak pulse power capability with a 10/1000 µs waveform
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive, and telecommunication.

MECHANICAL DATA

Case: SMC (DO-214AB)
Molding compound meets UL 94 V-0 flammability rating
Base P/NHM3_X - halogen-free, RoHS-compliant and AEC-Q101 qualified ("_X" denotes revision code e.g. A, B, ...)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power dissipation with a 10/1000 µs waveform (fig. 3)	P_{PPM} (1)	5000	W
Peak power pulse current with a 10/1000 µs waveform (fig. 1)	I_{PPM} (1)	See next table	A
Power dissipation on infinite heatsink, T_M = 50 °C	P_D	6.5	W
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +185	°C

Note

(1) Non-repetitive current pulse, per fig. 3 and derated above T_A = 25 °C per fig. 2

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

DEVICE TYPE	DEVICE MARKING CODE	BREAKDOWN VOLTAGE V_{BR} AT I_T (1) (V)			TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_R (µA)	MAXIMUM REVERSE LEAKAGE AT V_{WM} T_J = 150 °C I_D (µA)	MAXIMUM PEAK PULSE SURGE CURRENT I_{PPM} (2) (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	TYPICAL TEMP. COEFFICIENT OF V_{BR} (3) αT (%/°C)
		MIN.	NOM.	MAX.							
5KASMC10A	5AX	11.1	11.7	12.3	1.0	10	20.0	500	294.1	17.0	0.069
5KASMC12A	5BE	13.3	14.0	14.7	1.0	12	10.0	300	251.3	19.9	0.074
5KASMC13A	5BG	14.4	15.2	15.9	1.0	13	10.0	300	232.6	21.5	0.076
5KASMC16A	5BP	17.8	18.8	19.7	1.0	16	2.0	50	192.3	26.0	0.081
5KASMC17A	5BR	18.9	19.9	20.9	1.0	17	2.0	50	181.2	27.6	0.082
5KASMC18A	5BT	20.0	21.1	22.1	1.0	18	2.0	50	171.2	29.2	0.083
5KASMC20A	5BV	22.2	23.4	24.5	1.0	20	2.0	50	154.3	32.4	0.085
5KASMC22A	5BX	24.4	25.7	26.9	1.0	22	2.0	50	140.8	35.5	0.086
5KASMC24A	5BZ	26.7	28.1	29.5	1.0	24	2.0	50	128.5	38.9	0.087
5KASMC26A	5CE	28.9	30.4	31.9	1.0	26	2.0	50	118.8	42.1	0.088
5KASMC28A	5CG	31.1	32.8	34.4	1.0	28	2.0	50	110.1	45.4	0.089
5KASMC30A	5CK	33.3	35.1	36.8	1.0	30	2.0	50	103.3	48.4	0.090
5KASMC33A	5CM	36.7	38.7	40.6	1.0	33	2.0	50	93.8	53.3	0.091
5KASMC36A	5CP	40.0	42.1	44.2	1.0	36	2.0	50	86.1	58.1	0.091
5KASMC40A	5CR	44.4	46.8	49.1	1.0	40	2.0	50	77.5	64.5	0.092
5KASMC43A	5CT	47.8	50.3	52.8	1.0	43	2.0	50	72.0	69.4	0.093

Notes

(1) Pulse test: $t_p \leq 50$ ms

(2) Surge current waveform per fig. 3 and derated per fig. 2

(3) To calculate V_{BR} vs. junction temperature, use the following formula: V_{BR} at T_J = V_{BR} at 25 °C x (1 + αT x (T_J - 25))

(4) All terms and symbols are consistent with ANSI/IEEE C62.35

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to ambient	$R_{\theta JA}$ (1)	100	°C/W
Typical thermal resistance, junction to mount	$R_{\theta JM}$ (2)	20.8	°C/W

Notes

(1) Mounted on minimum recommended pad layout

(2) Mounted on infinite heat sink

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
5KASMC10AHM3_A/H (1)	0.257	H	850	7" diameter plastic tape and reel
5KASMC10AHM3_A/I (1)	0.257	I	3500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

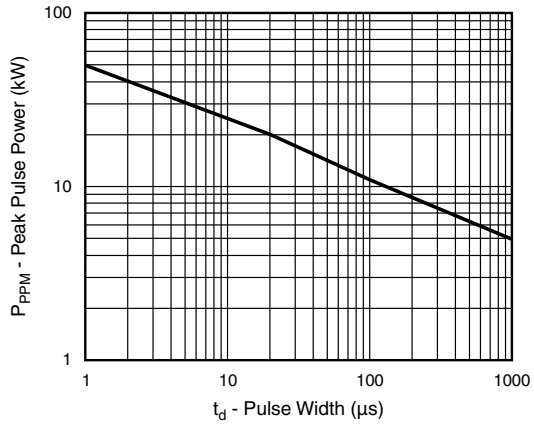


Fig. 1 - Peak Pulse Power Rating Curve

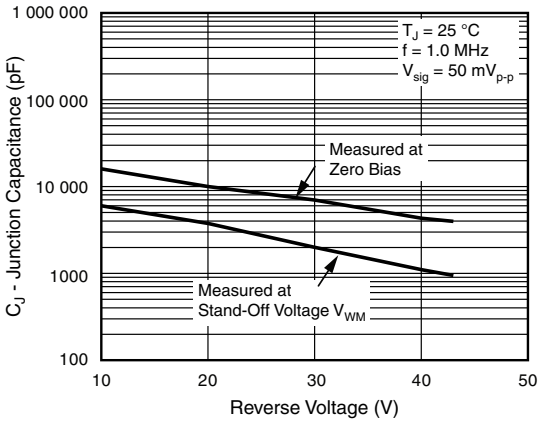


Fig. 4 - Typical Junction Capacitance

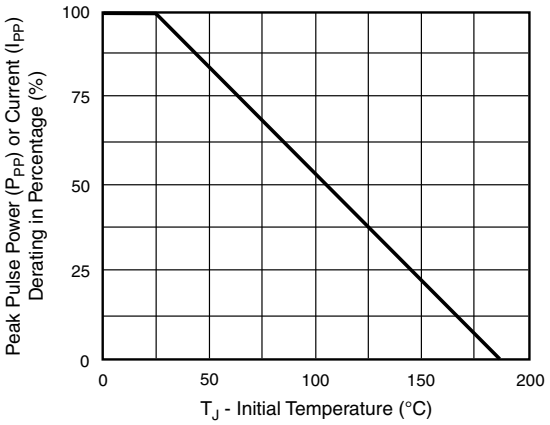


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

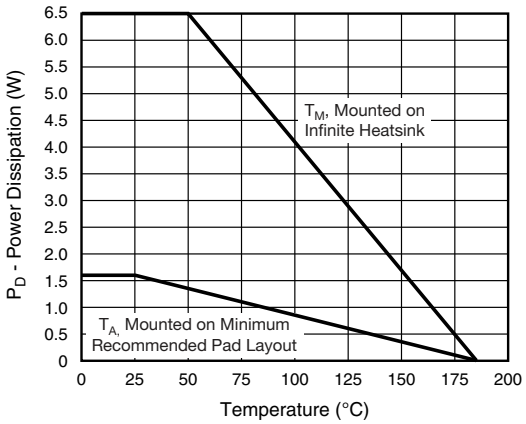


Fig. 5 - Power Derating Curve

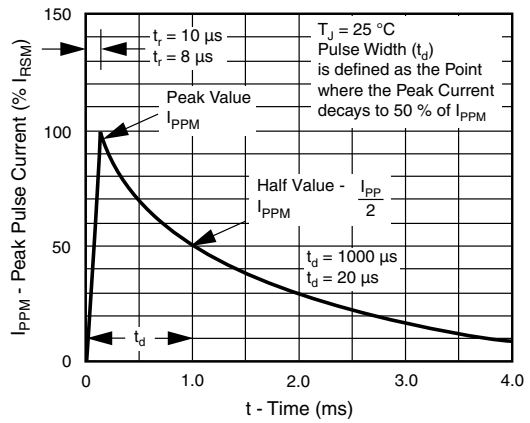


Fig. 3 - Pulse Waveform

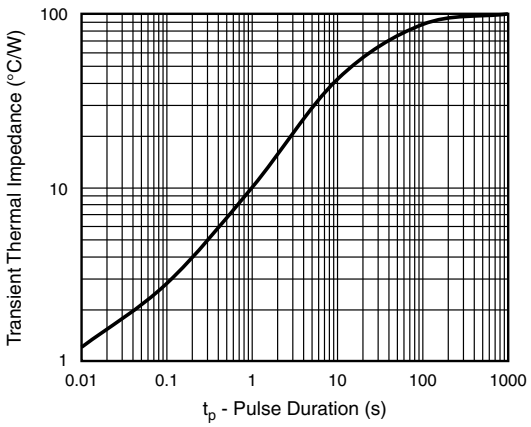
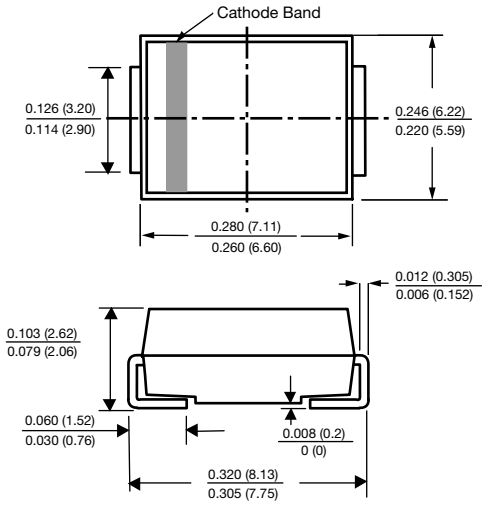


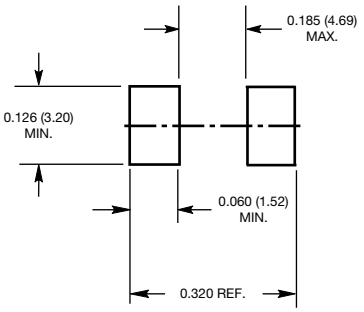
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMC (DO-214AB)



Mounting Pad Layout



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